

AUSTRALIA

*Patents Act 1990*

IN THE MATTER OF Australian Patent  
Application Serial No 696764 by Human  
Genome Sciences, Inc.

-and-

IN THE MATTER OF Opposition thereto by  
Ludwig Institute for Cancer Research

THIS IS Exhibit 1 referred to in the Statutory Declaration of Peter Adrian Walton  
Rogers made before me this

16<sup>th</sup>

Day of February, 2000

Elizabeth Kennedy

ELIZABETH KENNEDY  
B.A. LL.B. (Hons) LL.M (Melb) SOLICITOR  
SOUTHERN HEALTH CARE NETWORK  
DAVID ST. DANDEMONG  
A natural person who is a current practitioner  
within the meaning of the Legal Practice Act 1996.



# ***CURRICULUM VITAE***

***Peter Adrian Walton ROGERS***

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Australia

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HOME: 22 Lucan Street  
Caulfield North, Victoria 3161  
Australia (Phone: +61-3-9527 7969)

DATE OF BIRTH: 1st September, 1955.

PLACE OF BIRTH: London, England.

MARITAL STATUS: Wife Cheryl and two children,  
Elizabeth 13 and Gillian 11

CITIZENSHIP: Australian and British  
(Dual Nationality)

QUALIFICATIONS: 1977 BSc (Hons)  
1983 PhD

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## 1. EDUCATION

1966 - 1973

Abingdon School, Berkshire, UK  
9 O-Levels, 3 A-levels.

September 1974 - June 1977

Liverpool University, U.K. B.Sc. Honours (IIA) in Marine Biology. Title of thesis: A Histological Study of Wound Healing in Plaice (*Pleuronectes platessa*).

## 2. POSTGRADUATE TRAINING

February 1980 - December 1982

Ph.D. studies, Flinders University, South Australia. Title of thesis: Rat Uterine Microvasculature During the Oestrous Cycle and Early Pregnancy.

March - June 1994

Mini sabbatical leave to work with Professor Steve Smith and Dr Stephen Charnock-Jones in the Department of Obstetrics and Gynaecology at Cambridge University. Studies included development of methods for non-isotopic techniques of *in situ* hybridisation and an investigation of VEGF expression in endometrium from women with progestin-induced breakthrough bleeding.

March-July 1988

Mini sabbatical leave to work with Prof. Gary Hodgen and Dr Ted Anderson at the Jones Institute Research Laboratories, Eastern Virginia Medical School, Norfolk, Virginia, USA. Studies included the development of a new technique for the isolation and long-term culture of human endometrial endothelial cells.

## 3. PREVIOUS RESEARCH POSITIONS

1993 -1995

NH&MRC Senior Research Fellow (levels 4-6), Dept. Obstetrics & Gynaecology, Monash University.

July 1986 - December 1992

Senior Research Fellow Grade 1. Dept. Obstetrics & Gynaecology, Monash University.

1985-1987

Worked on an intermittent basis as a scientific consultant for the company IVF Australia. Duties included advising on the establishment of IVF clinics in the United States, laboratory design and staff recruitment and training. During this period, numerous trips to the United States were made to provide training, technology transfer and assist in the process of opening new IVF clinics.

April 1985 - July 1987

Scientific Director of the Monash IVF Programme.

March 1985 - June 1986

Research Fellow Grade II, Dept. Obstetrics & Gynaecology, Monash University.

March 1983 - March 1985

Research Fellow Grade I, Department of Obstetrics & Gynaecology, Monash University.

December 1977 - December 1979

Research assistant to Dr. B.J. Gannon, Department of Human Morphology, School of Medicine, Flinders University, South Australia.

**4. PRESENT APPOINTMENT**

1996 to present: NH&MRC Principal Research Fellow, Dept. Obstetrics & Gynaecology, Monash University

1998 to present: Associate Professor, Dept. Obstetrics & Gynaecology, Monash University

**5. COLLABORATIONS**

As part of my work with the World Health Organisation Task Force on Long-Acting Systemic Agents for Fertility Regulation I am involved in several collaborative research projects with staff in the Human Reproduction Study Group at the University of Indonesia. The staff that I have the most involvement with are Dr Biran Affandi, Dr Sri Bekti Subakir, Dr Sugito Wonodirekso and Dr Julianto Witjaksono. This work investigates various aspects of endometrial breakthrough bleeding caused by long-term progestin contraception. This collaboration has been funded continuously by the World Health Organisation from 1990 with funds currently committed until the year 2000. I visit Jakarta 2-3 times per year where I am also involved in research training and technology transfer.

I collaborate with a number of people on different components of my research programme, including:

Dr Peter Dockery, University of Cork, Ireland; Morphometric studies on endometrial vasculature.

Dr Hillary Critchley, Edinburgh, UK. Menorrhagia studies.

Dr Judy Abraham, Scios Corporation, USA. Supply and testing of VEGF121.

Prof. Sangkot Marzuki, Director, Eijkman Institute, Jakarta. Pre-eclampsia studies.

Dr Chris Murphy, Dept. Anatomy & Histology, University of Sydney, Endometrial ultrastructure.

Dr Steve Stacker, Dr Marc Achen, Ludwig Institute, Melbourne. Various studies on VEGF

Dr Victor Lee, Kryocor Pty. Ltd., North Melbourne. Growth of endothelial cells on vascular grafts.

Dr Lois Salamonsen, Prince Henry's Institute, Melbourne. Norplant effects on the endometrium.

Prof. John Leeton, Monash IVF. Preparation of recipient endometrium for implantation

Dr Beatrice Susil, Anatomical Pathology, Monash Medical Centre. Endometrial and ovarian pathology.

Dr Euan Wallace, Dept. Obstetrics & Gynaecology, Monash University. Pre-eclampsia studies.

Dr Beverley Vollenhoven, Dept. Obstetrics & Gynaecology, Monash University. Fibroid studies.

I have also provided anti-VEGF antisera that I produced to Dr Tailoi Chan at Sydney University and Dr Wayne Tilley at Flinders University.

## 6. EVIDENCE OF NATIONAL AND INTERNATIONAL PROFILE

In 1998 I was 1 of only 2 Australian scientists invited to join the inaugural Editorial Board of the new international journal "Angiogenesis"

In recognition of the work performed by my group at Monash, the World Health Organisation, in conjunction with NIH from the US, will be held an international symposium on progestin contraceptives and endometrial breakthrough bleeding at Monash Medical Centre on May 4-5, 1999. This meeting was attended by approximately 15 international speakers comprising most of the leading research workers in the field. I was chairman of the organising committee for this meeting.

I have been invited to contribute chapters or reviews to several recent international books, including:

ROGERS PAW (1999) Menstruation. In: Estrogens and progestogens in clinical practice. Eds. I. Fraser, R. Jansen, R. Lobo and M. Whitehead. Churchill Livingstone, Edinburgh. U.K.

ROGERS PAW, LEETON J (1999) Uterine receptivity and embryo transfer. In: Handbook of In Vitro Fertilization 2nd edition. Gardner D, Trounson AO, Eds.

ROGERS PAW (1997) The endometrial vascular bed. In: Clinical Disorders of the Endometrium and Menstrual Cycle. Eds. I. Cameron, I. Fraser, S. Smith. Oxford University Press, New York pp 31-45.

I am also one of 4 international editors for a proposed book on vascular morphogenesis in the female reproductive system which has been accepted for inclusion by Springer Verlag in the Cardiovascular Molecular Morphogenesis Series.

In September 1994 I conducted a review on behalf of WHO and the Indonesian Government Department of Family Planning (BKKBN) on the research activities of Human Reproduction Study Groups at Universities in Jakarta, Surubaya and Medan.

### Invitations To Speak Overseas And At International Meetings

4th World Congress on In Vitro Fertilization, Melbourne, November 19-22nd, 1985. Plenary Lecture.

World Health Organisation seminar on endometrial bleeding and contraceptive use, Jakarta, Indonesia, November 17-18, 1989. Invited speaker.

United States - Australia Cooperative Workshop, "Successful maternal recognition of pregnancy: Signalling between the conceptus and maternal system." Sponsored by The National Science Foundation, USA, and The Department of Industry Commerce and Development, Australia. University of Hawaii, Honolulu, July 1-3rd, 1991. 2 invited papers.

National Institute of Child Health and Human Development, USA; Symposium on "Exogenous hormones and dysfunctional bleeding." NIH, Bethesda, Maryland, USA. May 4-6th, 1992. Invited speaker.

VIIth World Congress on Human Reproduction, Bali, Indonesia. April 4-9th. 1993. Basic

studies on endometrial bleeding in norplant users.

14th Asian and Oceanic Congress of Obstetrics and Gynaecology, Manila, November 14-19th, 1993. Research on progestogen-induced vaginal bleeding: a collaboration between Indonesia and Australia.

31st May 1994; Department of Obstetrics and Gynaecology at Edinburgh University, "Vascular growth in normal and Norplant treated endometrium".

3rd June 1994; Department of Obstetrics and Gynaecology, Queens University of Belfast, "Angiogenesis in endometrial bleeding disorders".

First International Meeting of World Placenta Associations, October 24-28, 1994. Sydney. Invited plenary lecture: Current studies on human implantation.

Eighth Symposium of the Australian and New Zealand Microcirculation Society. Auckland, Feb. 3-5, 1995. Invited lecture: Reproductive angiogenesis.

Second International Symposium on IVF, Seoul, Korea, April 29-30, 1995. Invited lecture, "Maternal age effects on the endometrium."

World Health Organisation sponsored meeting in Bali, October 14-15th, 1995. "Current research on progestin-only contraceptives and endometrial bleeding".

International Ferring Symposium on Function and Dysfunction of the Non-Pregnant Uterus. A Satellite Symposium to the 1997 ESHRE Annual Meeting. Germany, June 19-21, 1997. Title: Endometrial microvascular growth in normal and dysfunctional states".

Group seminar at the Department of Surgery, Harvard University, Boston, USA. 14 August 1997. Title: "Angiogenesis in reproductive tissues".

WHO/NIH Symposium on Steroids and Endometrial Breakthrough Bleeding, May 4-5, 1999. Title:- Growth and regression of the endometrial vasculature.

Gordon Research Conference on Angiogenesis and Microcirculation, Rhode Island, USA. Chairman and Discussion Leader on Angiogenesis in Reproduction session.

#### Invitations To Speak In Australia And At National Meetings

Australian Society for Reproductive Biology. Embryo Transfer Satellite Symposium, Adelaide, 25th August 1985. Invited speaker.

Australian and New Zealand Microcirculation Society, Fifth Symposium, Canberra, 10-12th February, 1989. Invited Speaker.

Fertility Society of Australia, 1989 Annual Scientific Meeting. Satellite symposium on embryology. Invited speaker.

Fertility Society of Australia, 10th Annual Conference, Lorne, Victoria. November 18-22nd,

1991. Invited speaker

Serono Symposium on Oocyte Donation, Melbourne, November 22-24th, 1991. Plenary lecture.

Australian Menopause Society, 3rd Congress, Melbourne, April 5-8th, 1992. Basic mechanisms of endometrial bleeding.

2nd Baker Institute Symposium, Melbourne, 11-13th December, 1992. Endometrial angiogenesis.

Howard Florey Institute of Experimental Physiology and Medicine. Seminar on "Endometrial angiogenesis - Basic and clinical studies". Melbourne, October 14th 1993.

Fertility Society of Australia, Embryo-Uterine Coculture Workshop, November 6 1993, Sydney. Invited lecture, "Animal Models for Implantation".

Monash Medical Centre Grand Round. August 2 1994. Angiogenesis in reproductive tissues.

International Symposium on Contemporary Microsurgery - Clinical and Research Vistas, Melbourne, St Vincents/Bernard O'Brien Institute. February 13-14th 1996. Title "The physiological basis of the angiogenic process".

Ludwig Institute 1996 Seminar Program. 21st June 1996. Title "Angiogenesis in the Female Reproductive Tract".

Medical Research Week, 4th June 1997. Title "Endometriosis".

Victorian Obstetrics and Gynaecologists Specialists seminar, July 24 1997. Title: "Basic studies on endometriosis".

CRC on Vertebrate Biocontrol Centre. Canberra May 14, 1998. Title: "Angiogenesis and implantation in the rat".

St Vincent's Institute of Medical Research 9th June 1998. Title: "Angiogenesis in the female reproductive tract"

PHIMR Symposium 15-16 October, 1998, Symposium on Title: Endometriosis. Why and How?

Australian and New Zealand Microcirculation Society, Tenth Symposium, Adelaide, 28-29 January, 1999. Invited Speaker.

The University of Melbourne, Department of Pharmacology, 26 April 1999. Title: "Angiogenesis in reproductive tissues".

Institute of Reproduction and Development Symposium, 7-8 May 1999. Title:- "Angiogenesis

in ovarian cancer".

Monash University Department of Anatomy Seminar Series, August 4, 1999. Title:-  
Angiogenesis in reproductive tissues".

#### Awards

Australian Society for Fish Biology. Gilbert P. Whitley Memorial Award for best scientific presentation by a student. 1980 Annual Meeting.

Fertility Society of Australia, 5th Annual Scientific Meeting, Adelaide, December 1986. Serono-CSL award for best scientific presentation.

Fertility Society of Australia, 6th Annual Scientific Meeting, Sydney, November 1987. Merrell-Dow award for best poster presentation.

Australian and New Zealand Microcirculation Society. Best paper by a young scientist at 1989 meeting.

#### Awards Received By Group Members

Keren Abberton, PhD student. Australian and New Zealand Microcirculation Society. Best paper by a student at 1997 meeting

Maxine Orre, PhD student. Second Peter Mac Symposium. New Strategies for Cancer Detection and Therapy. Best poster award, 1997

Caroline Gargett, Postdoc. Tenth Australian and New Zealand Microcirculation Symposium. Best talk by a young scientist, 1999

## **7. POSTGRADUATE AND UNDERGRADUATE TEACHING**

#### Completed Theses

PhD

1991-1994; Anne Macpherson. Title of Thesis: Endometrial angiogenesis

1994-1998; Maxine Orre. Title of Thesis: Angiogenesis in tumours of the ovary and breast

MD

1991-1993; Dr. Neil McClure. Title of Thesis: Aspects of ovarian angiogenesis and the ovarian hyperstimulation syndrome

1992-1994; Dr Mary Wingfield. Title of Thesis: Endometrial angiogenesis and CA125 in women with endometriosis

M. Reprod. Sci.

1990; Keren Abberton. Title of Thesis: A signal for vascular endothelial cell migration in rat and human endometrium

1996-1997; Linda Hii. Title of Thesis: Endometrial expression of integrin v3: Relationship to angiogenesis and uterine receptivity for implantation

**B.Med Sci**

1992; David Archbold. Title of Thesis: The expression of LCA, LFA-1 and MAC-1 within human endometrium throughout the menstrual cycle

1998; Robert Casey. Title of Thesis: Microvascular structure and function in human fibroids.

**BSc Honours**

1993; Fiona Kelly. Title of Thesis: Microvascular heterogeneity of normal human endometrium

1993; Fiona Lederman. Title of Thesis: Endometrial angiogenesis: production of endothelial cell migratory factor in vitro

1994; Jason Palmer. Title of Thesis: Vascular basement membrane composition in the endometrium of women receiving long-term progestin contraception

1996; Mozhgan Lotfi-Miri. Title of Thesis: Ovarian angiogenesis in the rat.

**Postgraduate Students: Under Supervision Or Writing Up**

**PhD**

1995-present; Keren Abberton. Topic of Thesis: Development and function of endometrial arterioles (Submission due April 1999)

1997-present; Dr Anne Rosamilia. Topic of Thesis: Cellular and vascular aspects of interstitial cystitis.

1997-present; Mozhgan Lotfi-Miri. Topic of Thesis: Regulation of endometrial angiogenesis during early pregnancy in the rat (Candidate currently on 12 months maternity leave)

1999-present; Bambang Heryanto. Topic of Thesis: Mechanisms of endometrial angiogenesis

**M.Reprod. Sci**

1998-1999; Corey Heffernan. Topic of Thesis: Angiogenesis inhibitors in human endometrium (Submission due July 1999)

**BSc Honours**

1999; Marina Zaitseva. Topic of Thesis: Regulation of vascular endothelial growth factor receptors in human myometrial microvascular endothelial cells

**Undergraduate Teaching Experience**

At Monash University I give a limited number of lectures to students in the Diploma and Masters of Reproductive Science courses, as well as providing supervision for various assignments and a practical class on immunohistochemistry. In the past I have given occasional lectures to the 5th year medical students, as well as to physiology, anatomy and veterinary students. At Flinders University from 1978-1982 I was heavily involved in running first year biology practical classes, as well as demonstrating anatomy and histology to medical students.

**8. ADMINISTRATIVE RESPONSIBILITIES**

Community Service: Trustee for the Jean Hailes Menopause Foundation (1988 to present)

In 1988 I became involved with 5 other people in establishing the Jean Hailes Foundation in honour of the life work of Dr Jean Hailes who died in November of that year. The Jean Hailes Foundation is a non-profit organisation specialising in the management of women's health. The Trust under which the Foundation operates, specifies 3 major activities:- clinical services,

research, and education, with the latter having a strong focus on health promotion and illness prevention. Since the opening of the Clinic in 1992, the Foundation and its activities have grown at a dramatic rate. In the financial year 1997-1998, the Foundation had a turnover in excess of \$1.7million. As one of five Trustees, I take responsibility for a range of policy and financial issues within the organisation. I have represented the Jean Hailes Foundation in discussions with both State and Federal Health Ministers and the work of the Foundation enjoys strong recognition from both these levels of government. Among the many activities currently on the agenda at the Foundation is the establishment of the Jean Hailes Chair in Women's Health to be established in the Monash University Department of Obstetrics and Gynaecology with funds raised by the Jean Hailes Foundation.

#### **Committee Memberships And Management Contributions**

1999 to present	Faculty of Medicine Research Strategic Planning Committee (Sub-committee of the Faculty of Medicine Research Committee)
1996 to present	Chairman, Department of Obstetrics and Gynaecology postgraduate students committee
1995 to present	Department of Obstetrics and Gynaecology Executive and Finance Committee
1992 to present	Company Director for Menoserve Pty Ltd, trading entity for the Jean Hailes Menopause Foundation.
1989 to present	Trustee and Foundation Board member of The Jean Hailes Menopause Foundation Trust.
1988 to present	Scientific Director, Monash IVF Donor oocyte program.
1988 to present	Department of Obstetrics and Gynaecology monthly Academics meetings.
1996 - 1998	Chairman, Monash Medical Centre Animal Experimentation Ethics Committee
1987 - 1998	Member, Monash Medical Centre Animal Ethics Committee
1997	Member, Monash University Animal Welfare Committee
1995 - 1997	Member, Faculty of Medicine B. Med. Sci. Committee
1993 - 1997	Member, Institute of Reproduction and Development Executive.
1993 - 1997	Department of Obstetrics and Gynaecology representative on Monash University Faculty of Medicine Board.
1989 - 1997	Board Member, Monash University Centre for Reproductive Biology

1986 - 1988	Member, Queen Victoria and Monash Medical Centre Animal House Co-ordinating Committee
1987 - 1988	Member, Monash Medical Centre IVF Unit Executive
1985 - 1987	Monash University-IVFA Operations Committee
1984 - 1987	Member of Monash IVF Executive
1984 - 1987	Member of Monash IVF Finance Committee
1985 - 1986	Chairman, Obstetrics & Gynaecology Animal Ethics Committee
1984 - 1985	Obstetrics & Gynaecology Representative on University Biomedical Library Committee
1981 - 1982	Postgraduate Representative on Flinders Medical Centre School Board
1981 - 1982	Member, Flinders Medical Centre Audio Visual Advisory Committee
1982	President, Flinders University Sports Association
1980 - 1982	President, Flinders University Underwater Club
1983 - 1986	National Testing Officer, Cave Diving Association of Australia

## 9. PEER REVIEW AND SCIENTIFIC DISCIPLINE INVOLVEMENT

### Refereeing For International Journals And Granting Bodies

I am on the editorial board of the new international journal, Angiogenesis, and have served on the Editorial Board for the Chinese Journal of Physiology. I have acted as an ad hoc referee for a number of scientific journals, including: Journal of Reproduction and Fertility, Biology of Reproduction, Fertility and Sterility, Human Reproduction, Human Reproduction Update, Molecular Human Reproduction, Reproduction Fertility and Development, Journal of Endocrinology and International Journal of Cancer.

I referee grant applications for numerous agencies including National Health and Medical Research Council, Australian Research Council, various Australian Anti Cancer agencies, the Wellcome Foundation, the Health Research Council of New Zealand and the Biotechnology and Biological Sciences Research Council. In February 1999 I was a scientific grant referee for Indonesian Ministry of Education and Culture, Directorate General of Higher Education

### Society Memberships

Australian Society for Reproductive Biology

Australian Society for Medical Research

Australian Fertility Society (Foundation member)

Australian & New Zealand Microcirculation Society (Foundation member and President 1997-1998)

American Society for Reproductive Medicine (Formerly The American Fertility Society)

Society for the Study of Reproduction (USA)

### Scientific Committee Memberships And Society Offices Held

1998 - 1999	Chairman, Organising committee for WHO/NIH symposium on contraceptives and endometrial bleeding to be held at Monash Medical Centre May 4-5, 1999
1998 - 1999	Chairman, Organising Committee for Institute of Reproduction and Development annual symposium. "Angiogenesis in Reproductive Tissues" to be held at Monash Medical Centre May 7-8, 1999.
1997 - 1998	President, Australia and New Zealand Microcirculation Society
1996 - 1997	Chairman of organising committee for 1997 Australian and New Zealand Microcirculation Society Conference in Melbourne, January 30 - February 1, 1997.
1994	Member of organising committee, Carl Wood Festschrift, "Reproductive medicine beyond 2000".
1994	Convenor, Scientific Program Organising Committee, Australian Society for Medical Research 33rd National Scientific Conference, Melbourne, 27-30 November 1994

1992 Convenor, Victorian ASMR Medical Research Week.

1991 Lecture program organiser, Victorian ASMR Medical Research Week.

1990-1991 Organising committee and session chairman, Australian and New Zealand Microcirculation Society 1991 Scientific Meeting.

1989 Organiser and Chairman, Fertility Society of Australia Embryology Symposium

1985 Organizing Committee, 4th World Congress on IVF, Melbourne, Australia

#### 10. RESEARCH GRANT SUPPORT

I continue to run a group of between 10 and 15 staff and students with 80% of funding being obtained from peer review national and international sources. Over the 5 years, 1994-1998 I attracted approximately \$1.6 million in outside research funds, and my research group published 46 peer review publications, 14 chapters or invited reviews, and 53 conference abstracts.

##### Research Grants And Funding To Dr. P.A.W. Rogers

1985	Special research grant, Monash University. The role of the uterine microvasculature in early implantation	\$7,500
1985	Special grant from Serono and Commonwealth Serum Laboratories towards the establishment of a departmental histology laboratory	\$28,000
1985	Special grant of equipment towards the development of a high purity water system for IVF application from Millipore Australia	\$20,000
1985	Special grant from Organon towards a technical assistant's salary	\$10,000
1985	Donation from IVF patient towards microscope equipment for histology laboratory	\$6,000
1986-1988	NH&MRC. In vivo and ultrastructural studies on implantation and uterine receptivity	\$116,285
1986	William Buckland Foundation. Histological investigation of the anterior eye chamber embryo implantation model	\$3,060
1986	Special Research Grant, Monash University. Ultrastructural studies of human endometrium relating to uterine receptivity for implantation	\$5,000

1987	NH&MRC. Application for an electron microscope for studies in reproduction. Chief Investigator: Dr. A. Trounson, Senior Investigators: Drs. P. Rogers, A. Walker, H. Sathananthan	\$87,000
1987	Clive and Vera Ramaciotti Foundation. Shared equipment for measuring red blood cell velocity from videotape records of intravital blood flow in the micro-circulation. (Other Chief Investigators: Prof. B. Gannon, Prof. P. O'Brien)	\$10,000
1987	William Cook Australia Pty. Ltd. Technical salary support	\$5,000
1987	R.A. Hallenstein Charitable Trust. The role of uterine factors in human infertility	\$1,000
1988	Brockhoff Foundation. Ultrastructural studies on human post-menopausal endometrium following steroid replacement therapy	\$26,144
1988	R.A. Hallenstein Charitable Trust	\$3,000
1989-1991	NH&MRC. Molecular changes in the plasma membrane of human uterine epithelial cells	\$90,150
1989	CONRAD. Isolation and culture of human endometrial endothelial cells	\$18,797
1989	R. A. Hallenstein Charitable Trust	\$3,000
1989	Monash Research Fund. Endometrial response to different postmenopausal hormone replacement therapies	\$2,550
1990	Monash Medical Centre. Endometrial microvascular response to oestrogen	\$3,000
1990	Sunshine Foundation. Endometrial microvascular response to oestrogen	\$5,000
1990	Perpetual Executors and Trustees. Endometrial microvascular response to oestrogen	\$5,000
1990	Helen Schutt Foundation. Endometrial vascular response to oestrogen	\$5,000
1990	Infertility Medical Centre. Correlation of endometrial histology, morphometry and ultrasound appearance with superovulation protocol for IVF	\$12,000
1990-1993	World Health Organisation. The aetiology of increased endometrial bleeding in Norplant users; the role of local factors	\$300,000

1990	Buckland Foundation. Endometrial vascular response to oestrogen	\$5,000
1990	R. A. Hallenstein Charitable Trust. Endometrial vascular response to oestrogen.	\$3,000
1990	Collier Charitable Fund. Equipment grant to purchase a microhysteroscope for O&G Dept	\$2,500
1991-1993	NH&MRC. A study of endometrial microvascular function during embryo implantation	\$219,663
1991-1993	NH&MRC. The role of local endometrial factors in perimenopausal uterine bleeding	\$190,937
1991	Helen M. Schutt Trust. Equipment grant to purchase a microhysteroscope for O&G Dept	\$3,000
1991	William Angliss Charitable Fund. Equipment grant to purchase a microhysteroscope for O&G Dept	\$2,000
1992	Collier Charitable Fund. Purchase of 2 chemotaxis chambers	\$2,250
1992	Sunshine Foundation, Equipment grant to purchase a set of objective lenses for a new microscope	\$4,828
1993-1997	NH&MRC. Local regulation of endometrial angiogenesis (Senior Research Fellowship)	\$211,745
1993-1995	NH&MRC. Local mechanisms influencing endometrial function in menorrhagia	\$189,753
1993	Collier Charitable Trust. Purchase of image scanner	\$2,750
1993	ANZ Trustees. Purchase of Zeiss microscope	\$10,000
1993	ANZ Trustees. Menstrual disorders, Impact on womens health	\$10,000
1994-1996	World Health Organisation. Local control of the endometrial vasculature in women receiving long-term progestogen contraception	\$254,000
1994-1995	Anti-Cancer Council of Victoria. Role of vascular endothelial growthfactor in ovarian tumour angiogenesis	\$64,000
1994-1995	Slezak Trust (Through The Jean Hailes Menopause Foundation). Control of vascular growth in ovarian cancer	\$102,000

1994	The Arthur Wilson Memorial Scholarship in Obstetrics & Gynaecology. Spiral arteriole development in menorrhagia (Awarded to Dr Jacoba Kooy, postdoc in group)	\$20,000
1994	British Council Travel Grant. Travel funds for UK sabbatical	\$2,299
1994	Wellcome-Ramaciotti Research Travel Grant.	\$1,500
1994	William Buckland. The mechanism of action of Danazol in the regression of human endometrium and microvascular density. (Awarded to Dr. Tseng Lau, postdoc in group).	\$12,750
1995-1997	NH&MRC. Uterine microvascular-embryo interactions during implantation in the rat	\$163,818
1996-1998	The Jean Hailes Menopause Foundation. Research support grant.	\$15,000
1997	The Royal Australian College of Obstetrics & Gynaecologists. Arthur Wilson Memorial Scholarship in Obstetrics & Gynaecology.	\$20,000
1996-2000	NH&MRC. Endometrial angiogenesis (Principal Research Fellowship Grant)	\$958,883
1998-2000	World Health Organisation. Investigation of local mechanisms associated with progestin induced endometrial bleeding	\$252,392
1998	Appel Family Bequest. Factors influencing fibroid growth and Development.	\$12,500
1998	Contract Research with Kryocor Pty Ltd. Funds to establish endothelial Cell laboratory	\$42,000

## 11. BRIEF OUTLINE OF PREVIOUS, CURRENT AND PROPOSED RESEARCH EXPERIENCE

1977-1979

Work as Research Assistant in laboratory of Dr B Gannon, Dept. Human Morphology, Flinders University. Projects included histology, ultrastructure, morphometry and vascular corrosion casting studies on the microvasculature of the mammalian small intestine, lungfish gills and tuna gills.

1980-1983

PhD studies on rat uterine microvascular structure and function. Techniques included ultrastructure, vascular corrosion casting, morphometry and in vivo microscopy.

1983-1985

Postdoctoral appointment with Monash IVF. During this period I gained expertise in all aspects of human IVF, including embryology, andrology, endocrinology, ovulation induction and cryopreservation. In addition, I obtained independent research funding for staff and equipment to establish my own basic endometrial/implantation research group.

#### 1985-1987

Scientific Director, Monash IVF. Duties included overseeing and co-ordinating the scientific research projects associated with the Monash IVF programme, running the embryology laboratory, maintaining quality control and ensuring an adequate pregnancy rate, recruiting, training and supervising embryology staff (the IVF programme employed 6 embryologists at this time), preparing and participating in public information seminars and debates, and preparing submissions for government committees reviewing the legislation controlling and the funding for IVF in Australia. During this period I also ran my own basic research group studying endometrial function and implantation, and in 1986 obtained project funding from NH&MRC for studies on embryo implantation.

#### 1988-1992

My primary activities during this period were obtaining funding for, and running, a number of basic research projects relating to menstruation, the pathology of abnormal uterine bleeding, embryo implantation, endometrial structure and function and the endometrial microvasculature. Specific research projects included; work on endometrial microvascular function in women using long-term progestin contraceptive implants, factors that cause increased endometrial bleeding in peri-menopausal women, and the response of the rodent endometrial microvasculature to the implanting embryo.

#### 1993-1996

Major research interests included endometrial physiology, microvascular function, angiogenesis, and embryo implantation as well as a number of relevant gynaecological disorders including menorrhagia, endometriosis, peri-menopausal problems and contraceptive induced break-through bleeding. Developed considerable expertise in immunohistochemistry methodology.

#### 1997- to present

My research interests continued to develop within the broad field of reproductive biology and angiogenesis. Specific interests include understanding of the mechanisms and regulation of physiological angiogenesis in reproductive tissues during the menstrual cycle, and alterations in the angiogenic process that occur in tumour tissues. A number of collaborations with clinical investigators within and associated with the Department of Obstetrics and Gynaecology include work on topics such as leiomyoma, interstitial cystitis, endometriosis, menorrhagia, and pre-eclampsia. More recently I have established an endothelial cell laboratory in conjunction with an industry partner with various projects investigating macro and micro vascular endothelial cell biology.

#### The Future

I will continue to develop the expertise within my group and the Obstetrics & Gynaecology Department to pursue basic studies in areas such as angiogenesis, endothelial cell biology, and microvascular function. More clinically oriented studies will continue into diseases such as

reproductive cancers, menorrhagia, endometriosis, leiomyoma, interstitial cystitis, and pre-eclampsia. We have developed significant expertise in techniques such as immunohistochemistry, image analysis and tissue culture (including isolation and culture of microvascular endothelial cells, and a range of primary cell separation and culture techniques). Another major strength is our ability to liaise with a large number of clinical staff both in Melbourne and overseas. This gives us rapid access to large collections of well characterised clinical material for our research studies. We also have capabilities in a range of other methodologies, including *in situ* hybridisation, PCR, Northerns, RPA and various biochemical techniques. The development and increasing contribution of Dr Caroline Gargett as a postdoc within the group is seen as a significant plus for the future. Similarly, the recent addition of Dr Euan Wallace as a specialist obstetrician and researcher to the Department has opened up major new opportunities for collaboration. At the present time these are being pursued in the form of a major research proposal on pre-eclampsia.

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